AMENDMENTS TO THE CLAIMS

Following is a listing of all claims in the present application, which listing supersedes all previously presented claims:

Listing of Claims:

1. (Currently Amended) An apparatus for measuring local skin impedance, comprising:

a multi-channel electrode including a plurality of measurement sensors on an electrode surface having a predetermined area;

a channel selector configured to select each of channels included in the multi-channel electrode according to a channel control signal;

a constant current source configured to apply ~~for applying~~ a predetermined constant current to first and second regions, the first and second regions being disposed on opposite sides of a region to be measured;

a preprocessing unit configured to amplify and filter a potential value measured at each of the channels in the region to be measured, the region to be measured being disposed between the first and second regions, while the predetermined constant current is flowing through the region to be measured;

an analog-to-digital converter configured to convert the potential value output from the preprocessing unit into a digital signal; and

a control unit configured to generate the channel control signal, to process the digital signal output from the analog-to-digital converter, and to control the ~~entire~~ apparatus [[,]]

~~wherein the apparatus is configured to control pressure applied to each of the measurement sensors so that the pressure applied by the measurement sensors can be varied~~.

2. (Original) The apparatus as claimed in claim 1, wherein the plurality of measurement sensors is arranged in a matrix shape on the electrode surface.

3. (Original) The apparatus as claimed in claim 1, wherein the measurement sensors are pin electrodes made of a metal conductor and include a spring.

4. (Previously Presented) The apparatus as claimed in claim 1, wherein the multi-channel electrode further comprises twenty-five (25) measurement sensors arranged in a 5 x 5 matrix.

5. (Original) The apparatus as claimed in claim 1, wherein a pressure applied to each of the measurement sensors is adjusted depending on a curvature of the region to be measured during measurement of skin impedance.

6. (Original) The apparatus as claimed in claim 1, wherein the multi-channel electrode comprises a micro-electro-mechanical system (MEMS) electrode.

7. (Original) The apparatus as claimed in claim 1, wherein the constant current source comprises:

a positive electrode and a negative electrode, which are attached to a location on skin centering around the region to be measured such that the positive and negative electrodes are separated from the region to be measured by a predetermined distance, and the predetermined constant current output from the constant current source is applied to the skin through the positive electrode, then output from the skin through the negative electrode, and then flows back in the constant current source.

8. (Original) The apparatus as claimed in claim 1, wherein the preprocessing unit comprises:

a differential amplifier; and

a filter.

9. (Original) The apparatus as claimed in claim 8, wherein the filter is a sixth-order Butterworth filter having a cut-off frequency of 4 Hz or less.

10. (Previously Presented) The apparatus as claimed in claim 1, wherein the control unit comprises:

a personal computer configured to control the apparatus; and

a signal processor configured to generate the channel control signal and express the potential values acquired at each of the channels of the multi-channel electrode as a two-dimensional impedance distribution and a three-dimensional impedance distribution under a control of the personal computer.

11. (Previously Presented) The apparatus as claimed in claim 10, wherein the signal processor is configured to analyze and perform a measurement generally performed by an instrument such as an oscilloscope using the personal computer.

12. (Currently Amended) A method of acquiring a local skin impedance, comprising:

(a) disposing two electrodes of a constant current source on opposite sides of ~~centering around~~ a region to be measured on a patient's skin, and applying a predetermined constant current to the skin through the two electrodes for a predetermined time period;

(b) positioning a multi-channel electrode having a plurality of measurement sensors parallel to the region to be measured [[,]] ~~and controlling pressure applied to each of the measurement sensors of the multi-channel electrode so that the pressure applied by the measurement sensors can be varied~~; and

(c) applying the predetermined constant current between the two electrodes of the constant current source and measuring skin impedance at the region to be measured while the predetermined constant current flows through the region to be measured ~~is being applied~~.

13. (Original) The method as claimed in claim 12, wherein the multi-channel electrode comprises:

a plurality of measurement sensors arranged in a matrix shape on an electrode surface having a predetermined area.

14. (Original) The method as claimed in claim 12, wherein in (b), the measurement pressure is adjusted depending on a curvature of the region to be measured during measurement of skin impedance.

15. (Currently Amended) A method of measuring local skin impedance, comprising:

measuring a potential value at each of a plurality of channels included in a multi-channel electrode disposed between two electrodes of a constant current source, wherein the constant current source is configured to apply ~~for applying~~ a predetermined constant current to a patient's skin through the two electrodes, the multi-channel electrode includes a plurality of measurement sensors, the two electrodes are disposed on opposite sides of a region to be measured, and the measurement is performed while the predetermined constant current is flowing through the region to be measured;

~~controlling pressure applied to each of the measurement sensors of the multi-channel electrode so that the pressure applied by the measurement sensors can be varied;~~

amplifying and filtering the potential value at each channel;

converting the filtered potential value from an analog format into a digital format; and

analyzing the potential value in the digital format and displaying the results of the analysis in a form of a spatial impedance distribution in two and three dimensions.

16. (Original) The method as claimed in claim 15, wherein the multi-channel electrode comprises:

a plurality of measurement sensors arranged in a matrix shape on an electrode surface having a predetermined area.

17. (Original) A computer readable medium having embodied therein a computer program for the method of claim 12.

18. (Original) A computer readable medium having embodied therein a computer program for the method of claim 14.

19. (Original) A computer readable medium having embodied therein a computer program for the method of claim 16.